

as being unpatentable over *Paulsson* in view of *Bowers* and further in view of *Oswald et al.* and further in view of *Veneruso* (US 5,521,592). Claims 2, 5 and 13 stand rejected under 35 USC § 103(a) as being unpatentable over *Paulsson* in view of *Bowers* and further in view of *Oswald et al.* and further in view of *Belaigues et al.* (US 4,355,310). Claims 3 and 14 stand rejected under 35 USC § 103(a) as being unpatentable over *Paulsson* in view of *Bowers* and further in view of *Oswald et al.* and further in view of *Belaigues et al.* and further in view of *Doyle et al.* (US 5,504,479). Applicant respectfully traverses.

In order to sustain a rejection under 35 USC § 103, two requirements must be met. The first is that the limitations of the claimed invention must be taught in the prior art. The second requirement is **that there must be a teaching or suggestion in the prior art to combine the separate teachings to come up with the claimed invention.**

In the latest office action, the Examiner has again searched for prior art and has dismissed Applicant's arguments by asserting that the newly-found art renders the claimed invention obvious. The analysis provided in support of the conclusion in each case is merely the identification of individual elements found in the several references that appear to correspond to elements of the claimed invention. See September 26 office action sections 4-7. The Examiner concludes for each set of rejected claims that it would have been obvious to one skilled in the art to combine the references.

The requirements for review of prior art include a prohibition of such element listings

and general conclusions. In particular, the courts have held that the genius of invention is often a combination of known elements which in hindsight seems preordained. To prevent hindsight invalidation of patent claims, the law requires some "teaching, suggestion or reason" to combine cited references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 U.S.P.Q.2D (BNA) 1378, 1383 (Fed. Cir. 1997). When the art in question is relatively simple, the opportunity to judge by hindsight is particularly tempting. Consequently, the tests of whether to combine references need to be applied rigorously. See *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999), limited on other grounds by *In re Gartside*, 203 F.3d 1305, 53 U.S.P.Q.2D (BNA) 1769 (2000) (guarding against falling victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher).

Precisely the issue of combining references has been addressed in numerous cases by the Federal Circuit Court of Appeals. "The factual inquiry whether to combine references must be thorough and searching." It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2D (BNA) 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'" (quoting C.R. Bard, Inc., v. M3 Systems, Inc., 157 F.3d 1340, 1352, 48 U.S.P.Q.2D (BNA) 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that

the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 U.S.P.Q.2D (BNA) 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2D (BNA) 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 U.S.P.Q. (BNA) 929, 933 (Fed. Cir. 1984)). *In re Lee*, 61 USPQ 2d 1430, 1433 (Fed. Circuit. 2002). The examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references". *In re Lee*, 61 U.S.P.Q.2D (BNA) 1430.

### **Cited References**

Applicant addresses the three main references used in all rejected claims. The additional references are not discussed here for brevity, but Applicant has read the references and finds no suggestion or motivation that would counter Applicant's position with respect to the references discussed below.

*Paulsson* teaches a seismic sensor array coupled to a coiled tube for conveying the

array in the borehole and then clamped to a well casing. Thus, the communication cable is at all times supported by a tube, clamp or support mechanism. **There is no suggestion in *Paulsson* of the data cable being useful as a self supporting cable as in the case of a wireline cable.**

*Bowers* teaches a method of fabricating a load-bearing multi-conductor electrical logging cable. Bowers addresses the problem of capacitance coupling (column 3 lines 41 through 72) by addressing dielectric material between conductors. ***Bowers, however, does not suggest or imply using a conductor configuration other than the conductor configuration of a standard logging cable.***

*Oswald et al.* teaches a non-metal armor layer for a subterranean electrical cable. The reference teaches that significant damage can occur to the cables using metal armor during retrieval and reinstallation due to deterioration of the integrity of the metallic armor, such as by corrosion. **Nothing in *Oswald et al.* suggests anything beyond the typical conductors within the armor.**

Independent claim 1 of the present application is directed to a well logging system comprising a downhole well data sensor, a downhole data transmitter, a surface data receiver, and a data transmission cable linking the transmitter and the receiver, the cable having **at least one twisted pair of signal conductors**, each of the conductors being separately insulated, an insulation sheath surrounding the twisted pair of conductors **and**

**a tensile load carrier surrounding the insulation sheath, the load carrier comprising a sheath of tensile load carrying filaments.**

Independent claim 7 is to a well logging data cable comprising **a twisted pair of signal conductors...a tensile load sheath surrounding the insulation sheath, the tensile load sheath comprising a plurality of filaments.**

Independent claim 12 is to a method of transmitting a signal from within a well borehole to a surface location comprising conveying a signal on a data transmission cable..., the cable having **at least one twisted pair of signal conductors**, each of the conductors being separately insulated, an insulation sheath surrounding the twisted pair of conductors **and a tensile load carrier surrounding the insulation sheath**, the load carrier comprising a sheath of tensile load carrying filaments.

As to the independent claims, Applicant respectfully submits that it is clear that the Examiner has not presented a prima facie case of obviousness, because there is no suggestion or motivation to combine the references. All claims are directed to load-bearing communications cables used in well logging applications, where the cable includes twisted-pair conductors in combination with a tensile load carrier.

All other claims depend from respective independent claims already discussed here, and are allowable for at least the same reasons.

**As to claims 6 and 8**, the Examiner claims that *Bowers* teaches six twisted pairs and seven twisted pairs of conductors. The rejected claims include twisted pairs of separately insulated conductors. And Applicant has previously distinguished twisted pair conductors from stranded wire conductors and from the standard conductors helically wrapped as in *Bowers*. *Bowers* teaches nothing about twisted pair conductors.

**As to claim 11**, the Examiner asserts that the claim is obvious because one skilled in the art could achieve a cable having the claimed capacitance simply through design experiment because the disclosure does not provide an indication of the criticality of the claimed capacitance. The disclosure at page 5 lines 16 through page 6, line 4 shows that reducing capacitance is one factor in achieving increased bandwidth. Applicant submits that the Examiner has not met the burden to show prima facie obviousness as to claim 11.

### **Secondary Factors**

The present application teaches that the use of the twisted-pair conductors improves bandwidth of the logging cable as compared to standard logging cables. Applicant submitted rebuttal evidence in addition to the arguments traversing the obviousness rejections. The rebuttal evidence was submitted in the alternative and without acquiescing in the Examiner's conclusion that a prima facie case had been made. The Examiner concluded that the inventor's declaration submitted as rebuttal evidence is insufficient evidence and is mainly opinion with no factual evidence. Applicant respectfully reasserts the position that rebuttal evidence exists in addition to the arguments above that

the Examiner has failed to present a prima facie case of obviousness.

Again assuming only for the sake of argument that the Examiner has presented a prima facie case of obviousness, Applicant submits that the Declaration of Raman Viswanathan submitted in response to the previous office action (the Declaration), provides secondary factors sufficient to rebut obviousness when read along with Applicant's disclosure.

### **What Constitutes Rebuttal Evidence**

MPEP § 2144.08 II B provides a discussion regarding what constitutes rebuttal evidence. Rebuttal evidence and arguments **can be presented in the specification**, *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995), by counsel, *In re Chu*, 66 F.3d 292, 299, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995), **or by way of an affidavit or declaration under 37 CFR 1.132**, *e.g., Soni*, 54 F.3d at 750, 34 USPQ2d at 1687; *In re Piasecki*, 745 F.2d 1468, 1474, 223 USPQ 785, 789-90 (Fed. Cir. 1984).

Applicant submits that Applicant's declaration and specification as a whole constitutes rebuttal evidence and that it is error for the Examiner not to review the record as a whole in view of the Declaration.

### **Reviewing the evidence as a whole.**

MPEP § 2144.08 II B also provides a discussion regarding the proper review of

rebuttal evidence. Office personnel should consider **all rebuttal arguments and evidence presented by applicants**. See, e.g., *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995) (**error not to consider evidence presented in the specification**). C.f., *In re Alton*, 76 F.3d 1168, 37 USPQ2d 1578 (Fed. Cir. 1996) (error not to consider factual evidence submitted to counter a 35 U.S.C. 112 rejection); *Piasecki*, 745 F.2d at 1472, 223 USPQ at 788 (“**[Rebuttal evidence] may relate to any of the Graham factors including the so-called secondary considerations.**”). Rebuttal evidence may include evidence of “secondary considerations,” such as “commercial success, long felt but unsolved needs, [and] failure of others.” *Graham v. John Deere Co.*, 383 U.S. at 17, 148 USPQ at 467. See also, e.g., *In re Piasecki*, 745 F.2d 1468, 1473, 223 USPQ 785, 788 (Fed. Cir. 1984) (commercial success). Rebuttal evidence may also include evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art. Rebuttal evidence may consist of a showing that the claimed compound possesses unexpected properties. *Dillon*, 919 F.2d at 692-93, 16 USPQ2d at 1901. A showing of unexpected results must be based on evidence, not argument or speculation. *In re Mayne*, 104 F.3d 1339, 1343-44, 41 USPQ2d 1451, 1455-56 (Fed. Cir. 1997) (conclusory statements that claimed compound possesses unusually low immune response or unexpected biological activity that is unsupported by comparative data held insufficient to overcome prima facie case of obviousness).

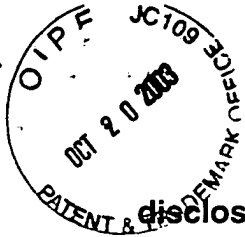
Applicant’s disclosure at page 13, lines 18-20 provides data comparing effective capacitance of the present invention compared to standard logging cables. A bandwidth



comparison can be made by comparing typical cable data found on page 4, line 22 with the bandwidth data of the present invention found on page 14, lines 1-2. The direct comparison data is also provided in the Declaration at paragraph XI. The Declaration provides other evidence in the form of factual statements that 1) others have tried and failed to produce an improved bandwidth logging cable and 2) that the cable of the present invention provides unexpected results. Therefore, Applicant submits that secondary factors exist to rebut any prima facie case of obviousness based on the art of record.

The declaration points out **in the form of factual statements** made within the personal knowledge of the inventor of the present invention that others in the logging industry have addressed the issue of bandwidth. In particular a logging cable known as a triax cable has been introduced to provide better bandwidth than a typical multi-conductor logging cable and to comply with regulations that the typical coaxial cable cannot meet. The triax cable, however appears to lack the bandwidth capabilities provided by the twisted-pair configuration of the present invention. See paragraphs IX-X. Therefore, Applicant respectfully submits that factual evidence has been provided showing others have tried to address logging cable bandwidth and have failed to produce a logging cable with the bandwidth of a cable according to the present invention.

Applicant further submits that the resultant bandwidth of a cable according to the present invention are unexpectedly high. As noted above, the specification shows comparative data at pages 4, 13 and 14. **And as noted in the Declaration and in the**




disclosure, the capacitance of the twisted-pair logging cable is at least four times better than coaxial and multi-conductor cables. Moreover, the Declaration points out that the bandwidth improvement is unexpectedly high, because a standard cable wraps conductors about a center conductor. Any outer conductor wraps about the center conductor, and one would expect an effect somewhat less effective but relatively close to a twisted pair wire with respect to bandwidth. See paragraphs XI-XII. Consequently, Applicant respectfully submits that factual statements in the Declaration and comparative data in the disclosure are evidence that bandwidth improvement in a well logging cable according to the present is unexpectedly high.

#### **CONCLUSION**

For all of the foregoing reasons, applicant submits that the claims are allowable over the prior art of record. The Commissioner is hereby authorized to charge any fee due for this response and to credit any overpayment to Deposit Account No. 02-0439 (664-23196-US).

Respectfully submitted,

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